

In the Claims:

1. (previously presented): A method for the preparation of a conditioned organic pigment comprising at least a first component selected from the group consisting of 4,4'-diamino-1,1'-dianthraquinonyls, diketopyrrolo[3,4-c]pyrroles, triphenedioxazines, indanthrones, perylenes, phthalocyanines and quinacridones, and a second component forming a solid solution or a mixed crystal with the first component, the molar ratio of the first component to the second component in the solid solution or mixed crystal being greater or equal to 1, wherein

- (1) a pigment suspension of the first component and a pigment suspension of the second component are each formed independently from the other through synthesis of an organic pigment in a liquid reaction medium and precipitation of the thus synthesized pigment from said liquid reaction medium;
- (2) the pigment suspension of the first component and the pigment suspension of the second component from step (1) are either separately transferred into separate storage vessels or both pigment suspensions are transferred into the same storage vessel;
- (3) if the liquid medium of the pigment suspension in one or both storage vessels does not already consist of water and optionally an organic liquid in which the amount of organic liquid is from 0 to 50% by weight, based on the total amount of organic liquid and water, the composition of the pigment suspension is so modified by means of the addition of water that the amount of organic liquid is from 0 to 50% by weight, based on the total amount of organic liquid and water; and/or optionally organic liquid is added in such quantity that its total amount does not exceed 50% by weight, based on the total amount of organic liquid and water;
- (4) the pigment suspension from the storage vessel containing the first component and the pigment suspension from the storage vessel containing the second component, or alternately the suspension from the storage vessel containing both pigment suspensions of step (1), are passed a number of times through an agitated media pearl mill in a circulating or shuttle mode of operation, the agitated media pearl mill having a smaller chamber volume than the volume of the pigment suspension and being operated at a specific power density of at most $2.0 \text{ kJ} \cdot \text{s}^{-1}$ per litre of grinding space, whereby in case of more than one storage vessel the flow between the storage vessels and the pearl mill is controlled in such a way that the contents of all storage

vessels are mixed together at any stage up to before a last pass in the pearl mill; whereby the first component and the second component combine to form a solid solution or a mixed crystal;

and

(5) optionally, the pigment is isolated by removing the liquid surrounding it.

2. (previously presented): A method for the preparation of a conditioned pigment according to Claim 1, wherein the second component is selected from the group consisting of the 1-aminoanthraquinones, anthanthrones, anthrapyrimidines, azos, azomethines, dioxazines, diketopyrrolopyrroles, flavanthrones, indanthrones, isoindolines, isoindolinones, isoviolanthrones, perinones, perylenes, phthalocyanines, pyranthrones, quinacridones, quinacridonequinones, quinophthalones or thioindigos.

3. (previously presented): A method for the preparation of a conditioned pigment according to Claim 1, wherein the first component is selected from the group consisting of quinacridones, perylenes and diketo[3,4-c]pyrrolopyrroles.

4. (previously presented): A method according to Claim 1, wherein the first component and the second component are both 4,4'-diamino-1,1'-dianthraquinonyls, both diketopyrrolo[3,4-c]pyrroles, both triphenedioxazines, both indanthrones, both perylenes, both phthalocyanines or both quinacridones.

5. (previously presented): A method according to Claim 1, comprising two quinacridones or a quinacridone and a diketopyrrolo[3,4-c]pyrrole.

6. (previously presented): A method according to Claim 1, wherein the organic liquid is neutral and comprises oxygen in its molecule.

7. (previously presented): A method according to Claim 1, wherein the organic liquid has a dipole moment μ of $2.8 - 6.0 \cdot 10^{-18}$ esu.

8. (previously presented): A method according to Claim 1, wherein the organic liquid is selected from the group consisting of acetamide, formamide, methylacetamide, methylformamide,

caprolactam, valerolactam, 1,1,2,2-tetramethylurea, dimethyl sulfoxide, sulfolane, nitromethane, nitrobenzene, acetonitrile, methanol, ethylene carbonate, dimethylacetamide, dimethylformamide and N-methylpyrrolidone, or is a mixture of a plurality of organic liquids, the overall polarity of which lies in the range of $2.8 - 6.0 \cdot 10^{-18}$ esu.

9. (previously presented): A method according to Claim 1, wherein the amount of organic liquid is from 1 to 30% by weight, based on the total amount of organic liquid and water.

10. (previously presented): A method according to Claim 1, wherein the amount of organic liquid is from 0 to 3% by weight of liquid, based on the total amount of organic liquid and water.

11. (previously presented): A method according to Claim 1, wherein the temperature of the suspension in the pearl mill is at the beginning of step (4) from 10 to 50°C and at the end of step (4) from 30 to 100°C.

12. (previously presented): A method according to Claim 1, wherein an additional substance selected from the group consisting of acids, bases, resins, growth inhibitors, phase directors, dispersing agents and wetting agents is added in any step (1), (2), (3), or (4).

13. (previously presented): A method according to Claim 1, wherein the total treatment period in the agitated media pearl mill is from 10 to 600 minutes.

14. (previously presented): A method according to Claim 13, wherein after two-third of the total treatment period, the agitated pearl mill is adjusted to a radial speed value of at most $11 \text{ m} \cdot \text{s}^{-1}$.

15. (previously presented): A method according to Claim 1, wherein the pigment obtained in step (5) consists of at least 90% by weight of particles having a size of $L \pm \frac{1}{2}\bar{L}$, wherein the average particle size \bar{L} is from 0.01 to 3 μm .

16. (previously presented): A method according to Claim 1, wherein the pigment obtained in step (5) is hiding and leads to a color difference ΔE^* less or equal to 15, measured in a $25 \pm 5 \mu\text{m}$ thick acrylic or polyester enamel coating system having a pigment to binder weight ratio of 0.18 over a black and white background.

17. (previously presented): A method according to Claim 1, wherein the pigment obtained in step (5) is transparent and has a particle size of 0.001–0.3 μm .

18. (previously presented): A method according to Claim 5, wherein the two quinacridones or a quinacridone and a diketopyrrolo[3,4-c]pyrrole are selected from the following pairs: unsubstituted quinacridone and 2,9-dichloroquinacridone; unsubstituted quinacridone and 3,6-diphenyl-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione; unsubstituted quinacridone and 3,6-di(4'-chloro-phenyl)-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione; 2,9-dichloroquinacridone and 3,6-diphenyl-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione; 2,9-dichloroquinacridone and 3,6-di(4'-chloro-phenyl)-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione; 3,6-diphenyl-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione and 3,6-di(4'-chloro-phenyl)-2,5-dihydro-pyrrolo[3,4-c]pyrrole-1,4-dione.

19. (previously presented): A method according to Claim 1, wherein the liquid media is at a pH in the range of from 9-11.

20. (previously presented): A method according to Claim 1, wherein the pigment obtained in step (5) is hiding and leads to a color difference ΔE^* less or equal to 10, measured in a $25 \pm 5 \mu\text{m}$ thick acrylic or polyester enamel coating system having a pigment to binder weight ratio of 0.18 over a black and white background.

21. (previously presented): A method for the preparation of a conditioned organic pigment according to Claim 1, wherein the concentration of pigment in any of the pigment suspensions is increased between steps (1) and (2) and/or between steps (4) and (5) by removing part of the liquid medium.

22. (previously presented): A method for the preparation of a conditioned organic pigment according to Claim 21, wherein a washing agent is added once or more than once before the concentration of pigment in a pigment suspension is increased by removing part of the liquid medium.

23. (previously presented): A method for the preparation of a conditioned organic pigment according to Claim 1, wherein in step (2) the pigment surface is kept substantially wetted with liquid reaction medium, washing agent, organic liquid or water all the time.

24. (previously presented): A method for the preparation of a conditioned organic pigment according to Claim 1, wherein in step (2) a pigment suspension is dried to obtain a pigment having a specific surface area of from 1 to 25 m²/g and comprising a residual amount of water or an organic liquid of from 0.1 to 20% by weight, which pigment is transferred into the storage vessel.

25. (previously presented): A method according to Claim 8, wherein the organic liquid comprises dimethyl sulfoxide (DMSO), dimethylformamide (DMF) or N-methylpyrrolidone (NMP).

26. (previously presented): A method according to Claim 14, wherein after two-third of the total treatment period, the radial speed of the agitated media pearl mill is adjusted to a value of from 1 to 8 m·s⁻¹.

27. (previously presented): A method according to Claim 15, wherein the pigment obtained in step (5) consists of at least 90% by weight of particles having a size of $L \pm \frac{1}{2}\bar{L}$, wherein the average particle size \bar{L} is from 0.05 to 2 μm.

28. (previously presented): A method according to Claim 15, wherein the pigment obtained in step (5) consists of at least 80% by weight of particles having a size of $L \pm \frac{1}{4}\bar{L}$.

29. (previously presented): A method according to Claim 18, wherein the two quinacridones or a quinacridone and a diketopyrrolo[3,4-c]pyrrole are selected from the following pairs: unsubstituted quinacridone and 2,9-dichloroquinacridone; unsubstituted quinacridone and 3,6-diphenyl-2,5-dihydropyrrolo[3,4-c]pyrrole-1,4-dione; 2,9-dichloroquinacridone and 3,6-di(4'-chloro-phenyl)-2,5-dihydropyrrolo[3,4-c]pyrrole-1,4-dione.

30. (previously presented): A method according to Claim 1, wherein

the first component and the second component are each independently chosen from the group consisting of 4,4'-diamino-1,1'-dianthraquinonyls, diketopyrrolo[3,4-c]pyrroles, perylenes, and quinacridones;

the organic liquid of step 3 is present, or is modified to be present, in the amount of from 3 to 20% by weight, based on the total amount of organic liquid and water, and is selected from the group

consisting of dimethyl sulfoxide, dimethylformamide and N-methylpyrrolidone, or is a mixture of a plurality of organic liquids, the overall polarity of which lies in the range of $3.3 - 5.5 \cdot 10^{-18}$ esu;

the temperature of the suspension in the pearl mill is at the beginning of step (4) from 15 to 45°C and at the end of step (4) from 50 to 100°C;

the total treatment period in the agitated media pearl mill is from 10 to 600 minutes;

wherein after two-third of the total treatment period, the agitated pearl mill is adjusted to a radial speed value of $1-8 \text{ m} \cdot \text{s}^{-1}$;

the pigment obtained consists of at least 90% by weight of particles having a size of $L \pm \frac{1}{2} \bar{L}$ and at least 80% by weight of particles having a size of $L \pm \frac{1}{4} \bar{L}$ wherein the average particle size \bar{L} is from 0.01 to 3 μm ;

and

optionally, an additional substance selected from the group consisting of acids, bases, resins, growth inhibitors, phase directors, dispersing agents and wetting agents is added in any step (1), (2), (3), or (4).

31. (previously presented): A method according to Claim 1, wherein

the first component and the second component are each independently chosen from the group consisting of diketopyrrolo[3,4-c]pyrroles, perylenes, and quinacridones;

the organic liquid of step 3 is present, or is modified to be present, in the amount of from 1 to 30% by weight, based on the total amount of organic liquid and water, and is selected from the group consisting of acetamide, formamide, methylacetamide, methylformamide, caprolactam, valerolactam, 1,1,2,2-tetramethylurea, sulfolane, nitromethane, nitrobenzene, acetonitrile, methanol, ethylene carbonate, dimethylacetamide, dimethyl sulfoxide, dimethylformamide and N-methylpyrrolidone, or is a mixture of a plurality of organic liquids, the overall polarity of which lies in the range of $2.8 - 6.0 \cdot 10^{-18}$ esu;

the liquid media is at a pH in the range of from 9-11;

the temperature of the suspension in the pearl mill is at the beginning of step (4) from 15 to 45°C and at the end of step (4) from 50 to 100°C;

the total treatment period in the agitated media pearl mill is from 20 to 200 minutes;

wherein after two-third of the total treatment period, the agitated pearl mill radial speed is adjusted to a value of $1-8 \text{ m}\cdot\text{s}^{-1}$;

the pigment obtained consists of at least 90% by weight of particles having a size of $L \pm \frac{1}{2}\bar{L}$ and at least 80% by weight of particles having a size of $L \pm \frac{1}{4}\bar{L}$ wherein the average particle size \bar{L} is from 0.05 to 2 μm ;

and

optionally, an additional substance selected from the group consisting of acids, bases, resins, growth inhibitors, phase directors, dispersing agents and wetting agents is added in any step (1), (2), (3), or (4).

32. (new): A method according to Claim 7, wherein the organic liquid has a dipole moment μ of $3.8 - 5.5 \cdot 10^{-18}$ esu.

33. (new): A method according to Claim 8, wherein the organic liquid is from 5-10% by weight based on the total amount of organic liquid and water, comprises N-methylpyrrolidone (NMP) and the pH is in the range of from 9 to 11.

34. (new): A method according to Claim 11, wherein the temperature of the suspension in the pearl mill is at the beginning of step (4) from 15 to 45°C and at the end of step (4) from 50 to 100°C.